"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

REBANE, K. -S. K. et al, Zhurnal Prikladnoy Spektroskopii (Journal of Applied Spectroscopy), Vol 15, No 4, Oct 71, pp 647-652

alter the shape of the curve but does affect the excitation of the bands. Intense blue and green emission bands are seen in the hydrogen-treated samples.

A series of phosphore samples were heated in hydrogen at 100° intervals from 400 to 1100°C. The intensity of stationary luminescence and the coefficient of ir extinction in the 800° sample was 4 to 5 times greater than for the other samples. The best ZnS-NaCl sample at 77°K near the 1-ev band is about 2 orders more effective than ZnS-CuCl or SnS-CeSm. It is suggested that the bands at 1.1 and 1.4 ev are due to the escape of electrons from centers consisting of various associations of different lattice defects.

Orig. art. has 6 figs. and 15 refs.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR UDC 535.343.2

PIYR, K. Yu., REBANE, K.-S. K.

"On the Nature of Edge Absorption of ZnS and SnO_2"

Minsk, Zhurnal Prikladnoy Spektroskopii, vol 15, No 5, Nov 71, pp 837-842

Abstract: The absorption spectra of films of SnO_2 and ZnS, as well as the ZnS-SnO_2 system, were measured in the 3.1-5.2 eV region. The edge of the absorption spectrum for SnO_2 corresponding to direct transitions is located at about 4.4 eV, while the edge of the absorption spectrum corresponding to indirect transitions lies at 3.4-3.6 eV. The typical bump on the long-wave decline of the absorption spectrum for ZnS films at $E_0 = 3.8$-3.9 eV is compared with direct transitions Γ_{15}-Γ_1. On the long-wave side, E_0 overlaps with the absorption of various lattice defects, while on the short-wave side of the band, E_0 reflects absorption due to various direct and indirect transitions. The absorption spectrum of the ZnS-SnO_2 system is determined chiefly by ZnS absorption. Four figures, bibliography of twenty-two titles.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

1/2 028 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--THE ROLE OF BRONCHONODULAR TUBERCULOSIS IN THE DEVELOPMENT OF PNEUMOFIBROSES -U-

AUTHOR--KOLESHKO, L., REBANE, L.

COUNTRY OF INFO--USSR

SOURCE--TERAPEVTICHESKIY ARKHIV, 1970, VOL 42, NR 2, PP 21-26

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TUBERCULOSIS, PEDIATRICS, LYMPHATIC SYSTEM, CIRRHOSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/1789 STEP NO--UR/0504/70/042/002/0021/0026

CIRC ACCESSION NO--AP0101836

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

2/2 028 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0101836

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OF 280 CHILDREN AND ADOLESCENTS IN WHOM BRONCHOSCOPY REVEALED DIFFERENT PATHOLOGICAL CHANGES IN THE TRACHEA AND BRONCHI DUE TO TUBERCULOUS AFFECTION OF THE SURROUNDING LYMPHATIC NODES, IN COMPLEX ROENTGENOLOGICAL STUDY (WITH THE EMPLOYMENT OF BRONCHOGRAPHY IN 110 PERSONS) IN 237 CASES (87PERCENT) DEVELOPMENT OF METATUBERCULOUS CHANGES WAS FOUND. THE LATTER WERE OF A DIFFERENT NATURE AND EXTENT OF MARKEDNESS AND FLUCTUATED BETWEEN PARTIAL INTRASEGMENTAL AND MONOSEGMENTAL PNEUMO FIBROSIS (MAINLY IN THE HILUM OF THE THIRD BRONCHO PULMONARY SEGMENT) TO AND COMMON CIRRHOTIC CHANGES OF A POLYSEGMENTAL NATURE IN 79 PERSONS (33PERCENT). THE DATA OBTAINED MADE IT POSSIBLE TO CONSIDER THAT BRONCHONODULAR TUBERCULOSIS NOT INFREQUENTLY LEADS TO THE DEVELOPMENT OF PNEUMOFIBROSIS. WHEN ESTABLISHING SPECIFIC ETIOLOGY OF THESE LESIONS DATA OF ENDOSCOPIC STUDY IS OF GREAT IMPORTANCE.

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Molecular Physics

USSR

LYUBOV', REBANE, SAARI, P. and AVARMAA, R.

"Oscillatory Relaxation and Radiationless Transitions in Certain Molecular Luminescence Centers"

Tallin, Izvestiya Akademii Nauk Estonskoy SSR, Fizika, Matematika, No. 1, 1970, pp 44-56

Abstract: The authors' work on oscillatory relaxation and radiationless transition processes in molecular luminescence centers of O_2^-, S_2^-, and NO_2^- in alkali-halide crystal matrices is reviewed. Emphasis is given to finding the parameters of radiationless transitions and the oscillator relaxation times; i.e., the time for decay of local (intramolecular) oscillations into phonons of crystal oscillations. The studies showed that radiationless transitions in impurity centers formed by O_2^-, S_2^-, and NO_2^- molecules are similar to tunnel transitions but that the processes do not conform to the classical Franck-Conion principle. In the case of NO_2^- centers, for example, it was shown that competition between radiationless transitions and transitions accompanied by oscillatory relaxation leads to a drop in the luminescence output as the frequency of the exciting light increases. So-called optical quenching was also observed in NO_2^- centers. Several quantities and relationships describing the oscillatory relaxation process at an NO_2^- center in a KCl crystal lattice were determined experimentally at the local oscillation stage.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

1/2 035 UNCLASSIFIED PROCESSING DATE--23OCT7

TITLE--QUANTUM MECHANICAL CALCULATIONS OF DIAMAGNETIC SUSCEPTIBILITY OF GENERALIZED ALTERNANT SYSTEMS INFINITE IN ONE DIMENSION -U-

AUTHOR-(02)-KUMANOVA, M., REBANE, T.

R

COUNTRY OF INFO--USSR

SOURCE--VESTN. LENINGRAD. UNIV., FIZ. KHIM. 1970, (1), 158-61

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--CALCULATION, QUANTUM MECHANICS, DIAMAGNETISM, GRAPHITE, BORON NITRIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1794 STEP NO--UR/0054/70/000/001/0158/0161

CIRC ACCESSION NO--AP0123591

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

2/2 035 UNCLASSIFIED PROCESSING DATE--23OCT7

CIRC ACCESSION NO--AP0123591

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LONDON'S METHOD (1937) HAS USED T CALC. THE CONTRIBUTION OF THE INTERAT. PI ELECTRON CURRENTS IN THE DIAMAGNETIC SUSCEPTIBILITY, AND THE RESULTS ARE TABULATED. THE RESULTS CAN BE USED TO PREDICT AND INTERPRET THE DEPENDENCE OF THIS CONTRIBUTIO ON THE TRANSVERSE DIMENSIONS OF THE CRYSTALLITES FOR SYSTEMS SUCH AS GRAPHITE AND HEXAGONAL B NITRIDE.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

UDC 539.184

REBANE, T. K., and SMIRNOV, Ye. P

"The Application of a Modified Adiabatic Approximation to a Helium Atom"

Leningrad, Optika i Spektroskopiya, Vol 34, No 6, June 73, pp 1037 - 1042

Abstract: In Volume 31, page 350 of this Journal, Rebane suggested a modified adiabatic approximation (MAP) differing from the ordinary adiabatic approximation in that the equation for the rapid subsystem contains a coefficient of adiabaticity $\alpha(Q)$, which can be varied freely. The free choice of this function permits regulation of the degree in which the rapid subsystem adiabatically tracks the instantaneous configuration of the slow subsystem, leading to an improvement in the calculation of the mathematical expectation of total system energy. If α is assumed identical to 1, the MAP is identical to the ordinary adiabatic approximation. The optimal value of α is found to lie between 0 and 1.

Finding this optimal value is a key operation in the modified process. The method is based on the following considerations: If two arbitrary values are chosen for α and the modified adiabatic potentials calculated are found to be less for one than for the other over all values of Q, Courant's minimax theorem indicates that all eigenvalues of the equation for the wave function of the slow subsystem for which the modified adiabatic potential is lower will be lower than the corresponding eigenvalues calculated using the other value of α. The search

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

REBANE, T. C., et al., Leningrad, Optika i Spektroskopiya, Vol 34, No 6, Jun 73, pp 1037 - 1042

method then consists of using a sufficiently large number of values of α between 0 and 1 and choosing for every Q the modified adiabatic potential curve which is lowest, ultimately yielding a segmented curve, which is then replaced by a smoothed continuous analytic function.

The method is applied to the first 1snl levels of the helium atom, and the adiabatic connection between the state of the 1s electron and the instantaneous position of the external nl electron is described by the variable coefficient of adiabaticity α. The optimal values of α are found to differ significantly from unity when the nl electron is within the 1s electron cloud. Variational calculations show a significant improvement in accuracy for the first 1snl levels over the use of the ordinary adiabatic approximation.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

Foundry

USSR

UDC 669.162.26:519.28

REBEKO, A. F., and MKRTCHAN, L. S.

"Dynamic Characteristics of the Blast Furnace Process"

"Proizvodstvo Chernykh Metallov (Production of Ferrous Metals - Collection of Works) No 75, Metallurgiya Press, 1970, pp 3-8

Translation: Values of dynamic characteristics of the blast furnace process used in certain control channels of the thermal state and course of the furnace process are presented.

The dynamic characteristics were calculated using statistical methods, while the characteristics of the ore charge-silicon channel were determined on the basis of startup curves and using calculations according to a simplified mathematical medel.

The results produced can be used to regulate the blast furnace process. 4 figures; 1 table; 7 biblio. refs.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR UDC 632.952:633.15

REBENKO, V. P., Donetsk Experimental Station

"Effectiveness of the Application of Granozan and Mercuran Against Barley Diseases"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 8, No 12, Dec 70, pp 35-36

Abstract: It was shown that timely digestion of the seeds is more effective than treatment just prior to seeding. Treatment of the seeds on January 15 gave a 91-93% field germination and a harvest of 24.9-25.9 centners/hectare, while a treatment around April 15 gave 89-92% and 24.3-25.6 levels respectively. This method is currently used throughout the Donetsk Region.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

UDC 632.4.42/.49A./z

PERESYPKIN, V. F., and REBENKO, V. P., All Union Academy of Agricultural Sciences imeni V. I. Lenin, Moscow

"Dynamics of the Content of Nitrogen Compounds in Spring Barley in Relation to Resistance to Covered Smut"

Moscow, Sel'skokhozyaystvennaya Biologiya, Vol 5, No 6, 1970, pp 926-928

Abstract: A study was conducted on several varieties of spring barley differing with respect to their resistance to infection with Ustilago hordei, the agent of covered smut. Varieties with a high resistance to infection had a low content of total and protein nitrogen and a high content of non-protein nitrogen, as compared with varieties susceptible to infection. During infection with U. hordei, the content of total, protein, and non-protein nitrogen increased in barley plants. This increase was especially pronounced in plants of resistant varieties. Comparison of data pertaining to the relative content of nitrogen compounds in barley plants would aid in the selection of varieties resistant to covered smut.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

Phytology

UDC 633.16:581.51

USSR

PERESYPKIN, V. F., Corresponding Member, VASKhNIL, and REBENKO, V. P., Candidate of Biological Sciences, Donetsk State Agricultural Experimental Station

"The Mechanism of Increasing the Resistance of Barley to Ustilago Hordei Kell. et sw. Under Conditions of Mineral Nutrition"

Moscow, Doklady Vsesoyuznoy Ordena Lenina Akademii Sel'skokhozyaystvennykh Nauk imeni V. I. Lenin, (All Union Order of Lenin Academy of Agricultural Sciences imeni V. I. Lenin, No. 7, Jul 70, pp 5-7

Abstract: Histological, biochemical, and field studies were made of Donetsk 576 barley and its the fungus pathogen Ustilago hordei Kell, et sw. Infected barley grains were soaked in 0.1% $CoSO_4$, 0.2% $CuSO_4$, and water (control) before planting. Studies were made 18 hours after soaking, during growth and at harvest, and on reseeding and reharvesting for 4 years. The results showed that cobalt sulfate and copper sulfate are decidedly deleterious to the fungus, causing its disorganization, fragmentation, and ultimate lysis. Both compounds tested, especially the cobalt sulfate, enhance the natural enzyme activity, facilitating the combination of proteins, amino acids, and ascorbic acid. This action results in healthier growth of the plant, larger and fuller ears, heavier grain, and richer content in individual grains. In additionto raising the resistance of barley to disease,

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

PERESYPKIN, V. F., et al, Doklady Vsesoyuznoy Ordena Lenina Akademii Sel'skokhozyaystvennykh Nauk imeni V. I. Lenin, No 7, Jul 70, pp 5-7

the sulfates act as natural mineral nutrients, increasing the productivity of the grain through the mechanism of zymogenic interaction. They also increase the immunity of subsequent generations of the crop by a factor of 3-12 over that of the controls.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

1/2 025 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--THE INVESTIGATION OF DNP STRUCTURE AND ITS COMPONENTS BY OPTICAL METHODS -U-

AUTHOR-(04)-PERMOGOROV, V.I., SLADKOVA, I.A., DEBABOV, V.G., REBENTISH, B.A.

COUNTRY OF INFO--USSR

SOURCE--MOLEKULYARNAYA BIOLOGIYA, 1970, VOL 4, NR 3, PP 359-366

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DNA, PROTEIN, MOLECULAR STRUCTURE, BIOLOGIC STAIN, SPECTROPHOTOMETRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0152 STEP NO--UR/0463/70/004/003/0359/0366

CIRC ACCESSION NO--AP0120852

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

2/2 025 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120852

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INVESTIGATION OF CIRCULAR DICHROISM OF DNP, DNA AND HISTONES HAS BEEN CARRIED OUT. THE COMPARISON OF CURVES OF DNP CURCULAR DICHROISM WITH THOSE OF DNA IN SOLUTION AT VARIOUS NACL CONCENTRATIONS SHOWED THAT DNA IN DNP WAS NATIVE AND THAT ITS STATE IN DNP WAS SIMILAR TO THE STATE OF DNA IN 2 M NACL. IT WAS SHOWN THAT THE HELICAL CONTENT OF HISTONES IN DNP WAS EQUAL TO 44PERCENT. THE RESULTS OF INVESTIGATION OF ORD COMPLEXES OF ACRIDINE ORANGE WITH DNA AND DNP MAKE IT POSSIBLE TO CONCLUDE THAT DNA IN DNP IS NATIVE AND THAT A PART OF DNA IS FREE OF HISTONES. THE SPECTROPHOTOMETRIC TITRATION AND THE INDUCED OPTICAL ROTATORY DISPERSION MEASUREMENTS AT LOW RATIOS OF DYE: BINDING SITES INDICATED THAT APPROXIMATELY 20 PER CENT OF DNA IN DNP WAS FREE OF HISTONES.

FACILITY: INSTITUTE OF GENETICS OF MICROORGANISMA, MOSCOW.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

1/2 009 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--STRUCTURE OF DNA AND HISTONES IN THE NUCLEOHISTONE -U-

AUTHOR-(04)-PERMOGOROV, V.I., DEBABOV, V.G., SLADKOVA, I.A., REBENTISH, B.A.
COUNTRY OF INFO--USSR

SOURCE--BIOCHIM. BIOPHYS. ACTA 1970, 199(2), 556-8

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DNA, MOLECULAR STRUCTURE, BUFFER SOLUTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0313 STEP NO--NE/0000/70/199/002/0556/0558

CIRC ACCESSION NO--AP0119300
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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

2/2 009 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119300

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CD AND UV MEASUREMENTS OF NATIVE SOL. NUCLEOHISTONE FROM CALF THYMUS AND ITS COMPONENTS AT SEVERAL SALT CONCNS. ARE REPORTED. CD CURVES WERE OBTAINED FOR NUCLEOHISTONE, NATIVE DNA, DENATURED DNA, AND HISTONES IN DIL. PHOSPHATE BUFFER (0.7 MM, PH 6.8). CD CURVES WERE ALSO OBTAINED AT INCREASING SALT CONCNS., UP TO 2M NACL (IN ADDN. TO PHOSPHATE BUFFER). CHANGES IN CD OF NATIVE DNA BROUGHT ABOUT BY HIGH SALT CONC. WERE EXHIBITED IN A DECREASE OF THE PEAK NEAR 275 NM; IN 2M NACL THERE WAS A SIMILAR DECREASE IN THE PEAK OF THE NUCLEOHISTONE IN DIL. BUFFER. THE CD SPECTRUM OF DENATURED DNA OVER THE RANGE 260-300 NM WAS RELATIVELY UNAFFECTED BY SALT CONCN. THESE AND OTHER DATA SUGGESTED THAT IN SOL. NUCLEOHISTONE DNA HAS A DOUBLE HELIX CONFORMATION CLOSELY RELATED TO THE CONFORMATION OF DNA IN SOLN. OF HIGH SALT CONCN., AND THE HISTONES ASSUME THE PARTIAL ALPHA HELIX CONFORMATION. FACILITY: INST. GENET. SELECT. MICROORGS., MOSCOW, USSR.

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UDC 665.622.3

USSR

FILINA, R. A., KHABIBULINA, R. K., and REBEZA, M. I.

"Desalination of High-Paraffin Petroleums"

Neftepererabotka i neftekhimiya. Nauchno-tekhn. s., (Petroleum Processing and Petrochemistry. Scientific-Technical Collection), No 7, pp 1-3, 1969 (from Referativnyy Zhurnal Khimiya, No 3, Vol 2, 10 Feb 70, Abstract No 3 P119)

Translation: Results are presented from a work performed at the Grozninsk Scientific Research Institute on desalination of high-paraffin petroleums from Stavropol' kray and petroleum from the Uzen' deposit of the Mangyshlak peninsula.

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USSR

UDC 616.9-022.38-07:616.453-008.6-072.7

REBENOK, Zh. A., and KORNELYUK, G. P., Chair of Infecticus Diseases, Belorussian Institute for Advanced Training of Physicians, Minsk Infection Hospital

"Glucocorticoid Function of the Adrenals in Cases of Food Poisoning"

Moscow, Sovetskaya Meditsina, No 5, 1972, pp 69-71

Abstract: In spite of the fact that symptoms of adrenal insufficiency have been noted in cases of food poisoning and therapists use glucocorticoids in treatment, glucocorticoid function with this disease has been little studied. A group of 113 food poisoning cases were tested for 17-hydroxycorticosteroids (17-HCS) in urine. The cases were of diverse etiology (Staphylococcus, Salmonella and others) with a typical clinical syndrome of food poisoning: acute gastroenteritis and circulatory disorders. A significant decrease in excretion of 17-corticosteriod paralleled the severity of the disease. Even with steroid therapy, excretion of 17-HCS was still significantly less than normal. After ACTH injections, however, the excretion of 17-HCS increased more in the ill persons than in healthy persons, comparing their initial levels of excretion. The low level of 17-HCS may be explained by a complex hormonal situation: a sharply increased tissue demand for glucorticoids

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

REBENOK, Zh. A., and KORNELYUK, G. P., Sovetskaya Meditsina, No 5, 1972, pp 69-71

and insufficient stimulus, that is, disorder in the regulatory system of hypothalamus -- hypophysis -- adrenals. In severe cases this results in acute adrenal insufficiency. Glucocorticoid therapy of severe forms of food poisoning is indicated.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

STEPANOV, P. L., REBIN, A. M.

"One Model of Resource Control"

Kibernetika i vuz. [Cybernetics and the University -- Collection of Works], No 4, Tomsk, 1971, pp 155-159, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V457 by D. E.).

Translation: Two levels of resource reserves are defined, making up a strategy of control for a model assuming that the demand for the resource stored is a stable random process.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

UDC 539.37

REBINDER, the late P. A., and SHCHUKIN, YE. D., Institute of Physical Chemistry, Academy of Sciences USSR

"Surface Phenomena in Solids During Their Deformation and Destruction"

Moscow, Uspekhi Fizicheskikh Nauk, Vol 108, No 1, Sep 72, pp 3-42

Abstract: The article is a survey dealing with the facilitation of deformation and destruction processes in solids as a result of the reversible physicochemical effect of the medium. Along with the authors' laboratories at the Institute of Physical Chemistry, Academy of Sciences USSR, and in the Chemistry Faculty of Moscow State University, studies on the effect of surface-active media on the mechanical properties of solids have been intensively developed by a number of other scientific collectives and schools: viz., S. T. KISHKIN and YA. M. POTAK and coworkers in Moscow; G. V. KARPENKO and coworkers in L'vov; W. ROSTOKER, J. WESTBROOK, A. WESTWOOD, and coworkers in the United States; etc. The purpose of the article is to describe the principal ideas and directions which have been developed in the authors' work, illustrating them with individual examples from the works of P. A. REBINDER, V. I. LIKHTMAN, G. V. KARPENKO, YE. D. SHCHUKIN, N. V. PERTSOV, et al.

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USSR

REBINDER, the late P. A., and SHCHUKIN, YE. D., Uspekhi Fizicheskikh Nauk, Vol 108, No 1, Sep 72, pp 3-42

The facilitation effects have now been established for every type of solid: for hard metals (and some covalent crystals) on contact with liquid metals; for ionic crystals and inorganic glasses in the presence of molten salts, water, alcohols, and other polar media; for molecular crystals of organic compounds on contact with nonpolar and low-polarity organic liquids. The general nature of these phenomena is facilitation of the rupture and reconstruction of interatomic bonds in the presence of certain foreign atoms or molecules (possessing sufficient mobility to assure their penetration of the bond rupture zone) and can be described as a decrease in the free surface energy of a given solid under the influence of the surrounding medium. The principal condition for the strong effect of the medium on the mechanical properties of a solid (in the considered cases of a reversible adsorption interaction unrelated to dissolution, corrosion, or other chemical processes) is the related nature of the solid and the medium, which causes low surface energy values at the gas-solid interface. At the same time, the form and degree of manifestation of these effects depend on the real structure of the

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

REBINDER, the late P. A., and SHCHUKIN, YE. D., Uspekhi Fizicheskikh Nauk, Vol 108, No 1, Sep 72, pp 3-42

solid (defects) and deformation conditions — stresses, temperature, deformation rate, contact time,etc. The optimum combination of these factors makes it possible to use the effect of the medium to facilitate dispersion and treatment processes, especially for hard materials and those which are difficult to treat. On the other hand, the elimination of individual factors necessary for the adsorption reduction of strength opens up ways of protecting against the effect of the medium.

Urgent problems in this field include the development of thorough experimental research, especially under "pure" reproducible conditions, as well as a further theoretical analysis of the mechanism for the elementary events of bond rupture and reconstruction with the participation of foreign atoms or molecules. Such "intermediate" phenomena as the effect of chemical adsorption on mechanical characteristics; mechanical treatment when chemical, electrochemical,or mechanochemical reactions take place on the surface of a solid; and stress corrosion should be covered more fully. A study of the

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

REBINDER, the late P. A., and SHCHUKIN, YE. D., Uspekhi Fizicheskikh Nauk, Vol 108, No 1, Sep 72, pp 3-42

effect of active media on adhesion strength along interfaces in various macro- and microheterogeneous materials is of interest. In addition to construction materials, new — geological and biological — objects ought to be studied.

The article mentions work done by the following: V. S. YUSHCHENKO, YU. V. NAYDICH, V. G., BRAVINSKIY, M. S. ASLANOVA, V. YU. TRASKIN, S. I. KONTOROVICH, L. YA. MARGOLIS, YE. A. SINEVICH, A. N. TYNNYY, G. M. BARTENEV, YU. S. ZUYEV, V. A. KARGIN, P. V. KOZLOV, T. YU. LYUBIMOVA, B. I. KOSTETSKIY.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

RYKALIN, N. N. (Academician), Institute of Metallurgy, Academy of Sciences USSR; REBINDER, P. A. (Academician), Institute of Physical Chemistry, Academy of Sciences USSR; and DOLGOPOLOV, N. N. (Candidate of Technical Sciences), VNIIZhELEZOBETON (All-Union Scientific Research Institute of Industrial Technology of Precast Reinforced Concrete Structural Parts and Products)

"Application of Low-Temperature Plasma in the Technology of Structural Materials"

Moscow, Stroitel'nyye materialy, No 1, Jan 72, pp 7-8

Abstract: Discussed are recent developments by Soviet scientists in low-temperature plasma processes for use in construction and structural processes. Various types of plasmochemical equipment based on plasma generators are cited of which jet-arc, high-frequency, and superhigh-frequency (or microwave) plasmatron models found extensive applications. The distinctive features and capabilities of these plasma generators are detailed. Research conducted by the Soviet institutes in the last ten years resulted in the formulation of basic thermodynamic and kinematic processes as well as in designs of new high-power plasma equipment in the ten- and hundred-Mc range. Plasma processes include spray coating techniques, plasma

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

RYKALIN, N. N., (Academician), Institute of Metallurgy, Academy of Sciences USSR; et al, Stroitel'nyye materialy, No 1, Jan 72, pp 7-8

metallization of reinforced concrete, ceramics with aluminum, copper and superhigh-refractory and corrosion-resistant metals such as titanium and stainless steels. Experimentation with other plasma processes involves welding and cutting of refractory metals, rock, granite, gabbro, quartz, and application to mining and recovery processes. Particular emphasis is placed on plasma methods for producing highly disperse metal and mineral powders, particle spheroidization, silica- and titanium dioxide-base active fillers and dyes and pigments for the polymeric materials industry. The priority problems relative to plasma applications include advancement of automatic control systems and optimization of flow charts and individual equipment for the plasma industry.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

1/2 020 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--ON THE EFFECT OF SURFACTANTS ON STRUCTURE FORMATION IN POWDER DISPERSIONS IN NONPOLAR LIQUID MEDIUM AND IN AIR -U-

AUTHOR-(05)-BELUGINA, G.V., KONSTANTINOVA, V.V., MIRZAABDULLAYEVA, O., ZAKIYEVA, S.KH., REBINDER, P.A.

COUNTRY OF INFO--USSR

SOURCE--KOLLOIDNYY ZHURNAL, 1970, VOL 32, NR 2, PP 177-181

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--COAGULATION, AIR, CALCIUM CARBONATE, CALCIUM FLUORIDE, IRON OXIDE, HYDROCARBON, REACTION KINETICS, SURFACTANT, AEROSOL CHEMISTRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REFL/FRAME--1990/0768 STEP NO--UR/0069/70/032/002/0177/0181

CIRC ACCESSION NO--AP0108969
UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

UNCLASSIFIED PROCESSING DATE--020CT70

2/2 020

CIRC ACCESSION NO--AP0108969

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADDITIONES OF SURFACTANTS CHANGES THE SEDIMENTATION KINETICS OF SUSPENSIONS (CACO SUB3, FE SUB2 O SUB3, CAF SUB2), INCREASES THE VOLUME FRACTION OF THE SOLID PHASE IN THE SEDIMENT AND DIMINISHES THE STRENGTH OF COAGULATION STRUCTURES IN POWDER DISPERSIONS BOTH IN A LIQUID HYDROCARBON MEDIUM AND IN AIR. IN DISPERSIONS WITH MIXED SOLID PHASES SMALL ADDITIONS OF A SECOND DISPERSED PHASE HAVE A SIMILAR EFFECT.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

1/2 006 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--REDUCTION IN THE CRITICAL MICELLE CONCENTRATION IN AQUEOUS SOAP SOLUTIONS UNDER THE INFLUENCE OF DISSOLVED HYDROCARBONS AT VARIOUS

AUTHOR-(03)-MARKINA, Z.N., KOSTOVA, N.Z., REBINDER, P.A.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(1), 141-3

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--SOAP, SOLUBILITY, AQUEOUS SOLUTION, BENZENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/1128 STEP NO--UR/0020/70/191/001/0141/0143

CIRC ACCESSION NO--AT0119982

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

2/2 006 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0119982

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CRIT. CONCN. OF MICELLE FORMATION IS REPORTED FOR NA SALTS OF C SUB6-14 ALIPHATIC ACIDS IN SYSTEMS CONTG. C SUB6 H SUB6, PHET, AND C SUB8 H SUB18 BESIDES THE AQ. PHASES. INTRODUCTION OF TRULY DISSOLVED HYDROCARBONS INTO THE AQ. PHASE PROMOTES MICELLE FORMATION AND DECREASES THE CRIT. CONCN. THIS EFFECT DECREASES WITH INCREASING CHAIN LENGTH OF THE SOAP USED AND WITH REDN. OF SOLY. OF THE HYDROCARBON IN PURE H SUB2 O AND WITH DECREASING TEMP. THE SIGNIFICANCE OF THESE FACTORS IS DISCUSSED AT LENGTH ON THE BASIS OF THE STATISTICAL THERMODYNAMIC MODEL OF MICELLE FORMATION.

FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

1/2 024 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--EVALUATION OF THE STRENGTH OF INDIVIDUAL CONTACTS BETWEEN SMALL CRYSTALS IN POROUS BODIES -U-

AUTHOR-(04)-SHCHUKIN, YE.D., AMELINA, YE.A., YUSUPOV, R.K., REBINDER, P.A.

R

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(5), 1037-40 (TECH PHYS) (RUSS)

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--COHESION STRENGTH, POROSITY, CRYSTAL SURFACE, NAPHTHALENE, AMMONIUM NITRATE, THERMAL PROCESS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1496 STEP NO--UR/0020/70/191/005/1037/1040

CIRC ACCESSION NO--AT0130425

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

2/2 024 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AT0130425

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FINELY GROUND POWDERS OF NAPHTHALENE AND OF NH SUB4 NO SUB3 AS WELL AS SINGLE CRYSTALS OF THESE SUBSTANCES WERE COMPRESSED OR HEATED TO FUSION UNDER VERY CAREFULLY CONTROLLED CONDITIONS. THE POROUS PRODUCTS THUS OBTAINED WERE THEN SUBJECTED TO FORCES OF OPPOSITE SIGN. THE FORCE REQUIRED TO BREAK THE CONTACT ESTABLISHED BY EITHER COMPRESSION OR HEAT, DIVIDED BY THE AREA OF THE SPECIMEN GAVE THE STRENGTH OF THE INDIVIDUAL CONTACT. THIS METHOD ENABLED DIRECT MEASUREMENT OF THE COHESIVE FORCES OF INDIVIDUAL CONTACTS FROM THOUSANDTHS OF A DYNE TO SEVERAL HUNDRED DYNES. THE RESULTS ARE PLOTTED ON DISTRIBUTION CURVES. FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

1/2 011 UNCLASSIFIED PROCESSING DATE--090CT70

TITLE--STRUCTURE FORMATION IN GELATIN GELS -U-

AUTHOR-(03)-IZMAYLOVA, V.N., BOBROVA, L.YE., REBINDER, P.A.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSR 1970, 190(4), 876-9 (PHYS CHEM)

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PROCESSED ANIMAL PRODUCT, GEL, MOLECULAR STRUCTURE, LIGHT SCATTERING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1574 STEP NO--UR/0020/70/190/004/0876/0879

CIRC ACCESSION NO--AT0107994

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

UNCLASSIFIED PROCESSING DATE--09OCT70

2/2 011
CIRC ACCESSION NO--AT0107994
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STRUCTURE FORMATION IN GELATIN (I) GEL IS REGULATED BY THE SAME BASIC PRINCIPLES AS STRUCTURE FORMATION IN SOLNS. OF A LOW MOL. WT. COMPD. THIS IS RELATED TO THE BIPHYLICITY OF THE PROTEIN AND WITH THE HIGH ORDER OF ITS MACROMOL. THE DEPENDENCE OF THELIGHT SCATTERING INTENSITY ON I CONCN. IN 0.15M NACL AND 8M UREA SOLNS. IS GIVEN GRAPHICALLY. THE RATE OF LIGHT SCATTERING INCREASE IN SATD. I SOLNS. IS HIGHER AT LOW TEMP. (AT INCREASING SUPERSTN. OF I SOLNS.). HEAT OF I GEL FORMATION IS 49-58 KCAL-MOLE. FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

1/2 015 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--EFFECT OF TEMPERATURE AND SOLUBILIZATION OF HYDROCARBONS ON THE MEAN MICELLAR WEIGHTS IN AQUEOUS SODIUM OLEATE SOLUTIONS -U-

AUTHOR-(03)-CHINNIKOVA, A.V., MARKINA, Z.N., REBINDER, P.A.

COUNTRY OF INFO--USSR

SOURCE--KOLLOIDNYY ZHURNAL, 1970, VOL 32, NR 2, PP 288-292

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMAL EFFECT, ORGANOSODIUM COMPOUND, OLEIC ACID, HYDROCARBON, SOLUBILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1549 STEP NO--UR/0069/70/032/002/0288/0292

CIRC ACCESSION NO--AP0112543

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

2/2 015 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0112543

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NEPHELOMETRIC STUDIES HAVE BEEN CARRIED OUT IN AQUEOUS SODIUM OLEATE SOLUTIONS IN THE CONCENTRATION RANGE 1.25-15 G-100 ML OVER THE TEMPERATURE RANGE 20-60DEGREES. AT A DEFINITE CONCENTRATION OF SOAP SOLUTION SPHERICAL MECELLES CHANGE INTO LAMELLAR. WITH RISING TEMPERATURE, LAMELLAR MICELLES BREAK DOWN TO SPHERICAL AND THE AGGREGATION DEGREE OF SPHERICAL MECELLES SOMEWHAT DIMIGISHES. SOLUBILIZATION OF HYDROCARBONS BRINGS ABOUT BREAKING UP OF LAMELLAR MICELLES INTO SPHEROIDAL AND REORGANIZATION OF SPHERICAL MICELLES WITH INCREASE OF THEIR AGGREGATION DEGREE.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

Acc. Nr: AT0107995

Abstracting Service: CHEMICAL ABST. 6/70

Ref. Code: UR0020

124749g Isolation of tobermorite-like hydrated silicates on quartz surfaces under conditions close to their stability limit. Lyubimova, T. Yu.; Melent'eva, G. G.; Rebinder, P. A. (Inst. Fiz. Khim., Moscow, USSR). *Dokl. Akad. Nauk SSSR* 1970 190(6), 1410–13 [Chem Technol] (Russ). A suspension of $3CaO.SiO_2$ obtained by the sepn. from the solid at the moment of max. concn. with respect to SiO_2, was filtered into hermetically sealed polyethylene vessels, empty or filled with quartz sand, at a solid-liq. ratio 1:4. The concn. [CaO] and $[SiO_2]$ and the ratio $(C/S)_l$ in the liq. phase and the amt., Q, of the new phase and $(C/S)_s$ in the solid phase were detd. at regular periods, τ. At τ = 5–7 hr $(C/S)_s$ increased sharply from the initial 3 to 12–15. Q increased during the 1st 17 hr, i.e. the period of the initial decrease of [CaO] from 3 M. At τ = 24 hr [CaO] decreased and $[SiO_2]$ increased slightly, whereas Q and $(C/S)_s$ increased. The min. [CaO] at τ = 24–48 hr corresponded to the min. $(C/S)_s$ of 0.78–0.98. The labile characteristics of hydrated silicates of the tobermorite type in contact with the liq. phase of [CaO] $\leq$ 3–4 M was confirmed. Dehydration of silicates, at the decrease of [CaO], occurs on the solid surface before it takes place in the liq. phase. GBJR

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19891575

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

Instruments and Measurements

USSR

UDC 621.382:621.317.799

MOSTOVLYANSKIY, N.S., DRIZE, YE.I., REBOTENKO, O.G.

"Current Generator For Observation Of Voltampere Characteristics"

V sb. Poluprovodn. pribory i ikh primeneniye (Semiconductor Devices And Their Application--Collection Of Works), Issue 24, Moscow, "Sov.radio," 1970, pp 236-246 (from REh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 4B600)

Translation: Conditions are formulated for oscilloscoping the voltampere characteristics of S-type double-poles with negative resistance. A practical circuit is described for a cathode-ray curve tracer with a pulse duration adjustable in the range of 0.1--2 microsec. The output stage, accomplished with a transistor and electron tubes, assures a differential output resistance $\geqslant$ 0.5 Mohm with a load current in the hundreds of ma. 5 ref. Summary.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

UDC: 532.522.2

VOLCHKOV, V. V., IVANOV, A. V., KISLYAKOV, N. I., REBROV, A. K., SUKHNEV, V. A., and SHARAFUTDINOV, R. G.

"Low-Density Jets from a Sonic Nozzle at Large Pressure Drops"

Moscow, Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, No 2, 1973, pp 64-73

Abstract: Experiments are described for the observation of low-density gas dynamic jets using electron-beam analysis and the Pitot tube. A full description of the apparatus and the experimental method is given in earlier papers on which the present article is based (A. K. Rebrov, et al, Vliyaniye razrezhennosti na strukturu svobodnoy strui azota -- Effect of Rarefaction on the Structure of a Free Nitrogen Jet -- PMTF, No 1, 1971, and others). These experiments used sonic nozzles consisting of openings in a thin wall with a ratio of wall thickness to opening diameter of less than 0.05. With a Reynolds number greater than 200 at the nozzle opening, the effect of the boundary layer in the nozzle can be neglected and the flow factor of the nozzle can be taken equal to unity. Nitrogen, air, and carbon dioxide at a drag temperature of 300° K were used as the operating gases. The purpose of the experiments was to study the structure of longitudinal and transverse gas

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

UDC: 532.522.2

VOLCHKOV, V. V., et al, Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, No 2, 1973, pp 64-73

dynamic parameter distributions in the initial part of the jet, and set up a detailed picture of the jet flow for Reynolds numbers reduced to values corresponding to the dispersion modes for which the local mean free path of the molecules is commensurate with the flow dimensions.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

UDC 532.72

KISLYAKOV, N. I., REBROV, A. K., and SHARAFUTDINOV, R. G. (Novosibirsk)

"Diffusion Processes Within the Mixing Zone of a Low-Density Supersonic Jet"

Moscow, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 1, 1973, pp 121-127

Abstract: In this paper are presented the results of an experimental investigation of diffusion processes in a low-density jet behind a strongly underexpanded sonic nozzle in a zone of mixture with the surrounding gas. The structure of the jet during the expansion of N_2 into an atmosphere of $CO + N_2$ in regimes of the transition from continuous flow to rarefied flow were studied by means of electron-beam diagnostic equipment. Results of an analysis of the concentration fields of individual components are given in generalized form. In conclusion, the approximate limits of the characteristic regimes are indicated for diatomic gases with properties similar to those of nitrogen. 7 figures, 1 table, 12 references.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

REBROV, A.K., CHEKMAREV, S.F., SHARAFUTDINOV, R.G. (Novosibirsk)

"The Influence of Rarefication Upon the Structure of a Free Jet of Nitrogen"

Moscow, Zhurnal Priklandoy Mekhaniki i Tekhnicheskoy Fiziki, No 1, 1971, pp 136-141

Abstract: The influence of rarefication upon the structure of a free nitrogen jet is studied systematically on the basis of measurement of the density distribution. A quantitative and qualitative link is discovered between the intensity of the Mach disk in a jet of rarefied gas with density and incalculability. For the construction of a complete qualitative model of the initial sector of the jet behind a sonic nozzle at low density, it is necessary to investigate the conditions of transition from the described viscous flow to such a flow at which the change of density at the shock wave will be subject to the Hugoniot adiabat. 8 figures, 1 table, 4 bibliographic entries.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

1/2 036 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--EFFLUX OF RAREFIED GAS MIXTURES FROM OPENINGS -U-

AUTHOR-(04)-BOCHKAREV, A.A., KOSINOV, V.A., PRIKHODKO, V.G., REBROV, A.K.

COUNTRY OF INFO--USSR

SOURCE--INZHENERNO-FIZICHESKII ZHURNAL, VOL. 18, APR. 1970, P. 653-660

DATE PUBLISHED----APR70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--RAREFIED GAS, GAS PRESSURE, MOLECULAR KINETICS, FREE MOLECULAR FLOW, MULTICOMPONENT CHEMICAL MIXTURE, CARBON DIOXIDE, HELIUM, EXPANDING GAS, FLOW VELOCITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1382 STEP NO--UR/0170/70/018/000/0653/0660

CIRC ACCESSION NO--AP0125030

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

2/2 036 UNCLASSIFIED PROCESSING DATE--04DEC70

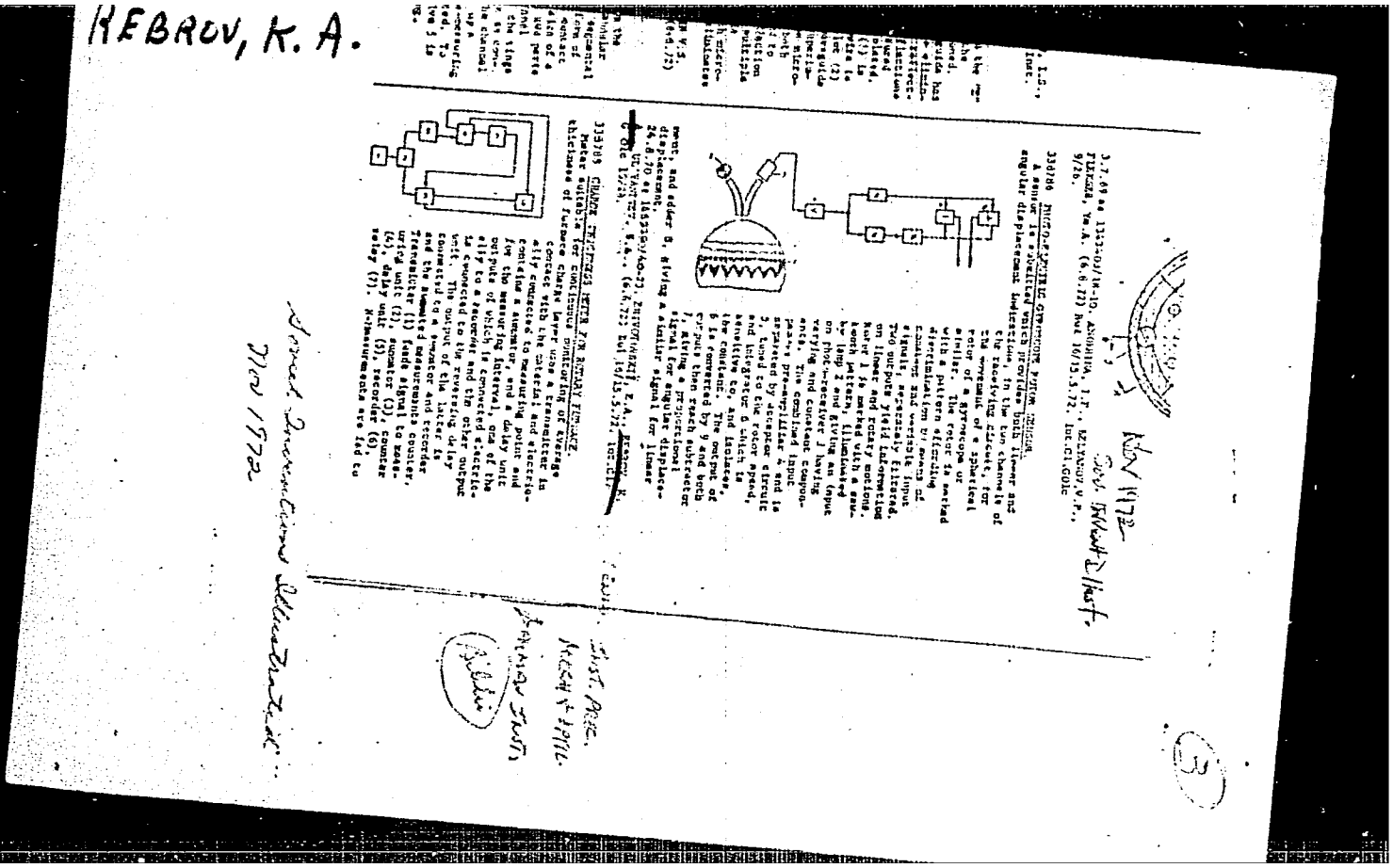
CIRC ACCESSION NO--AP0125030

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL AND EXPERIMENTAL INVESTIGATION OF THE EFFLUX OF A GAS MIXTURE, WHOSE COMPONENTS DIFFER GREATLY IN MOLECULAR WEIGHTS, FROM AN OPENING OVER A WIDE RANGE OF PRESSURES. IT IS SHOWN THAT FOR A MIXTURE EXPANDINGUNDER FLOW CONDITIONS CORRESPONDING TO THE TRANSITION FROM CONTINUOUS TO FREE MOLECULAR FLOW, A PRONOUNCED DIFFERENCE BETWEEN THE VELOCITIES OF THE MIXTURE COMPONENTS MAY BE OBSERVED. CONSEQUENTLY, THE CONCEPT OF DISCHARGE COEFFICIENTS OF THE MIXTURE COMPONENTS IS INTRODUCED. FORMULAS FOR CALCULATING THE DISCHARGE COEFFICIENTS FOR MOLECULAR FLOW CONDITIONS ARE DERIVED, AND NUMERICAL RESULTS FOR A MIXTURE OF HELIUM WITH CARBON DIOXIDE ARE OBTAINED. FACILITY: AKADEMIIA NAUK SSSR, INSTITUT TEPLOFIZIKI, NOVOSIBIRSK, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0



KEBROV, K. A.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

UDC: 621.372.837(088.8)

REBROV, S. I.

"A Commutator of Superhigh Frequency Oscillations"

USSR Author's Certificate No 265988, filed 13 Apr 57, published 10 Aug 70 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1B210 P)

Translation: The proposed commutator with resonance discharger permits switching of high power levels.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

1/2 030 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--ALUMINUM ALLOYS FOR NITRIC ACID TANKS -U-

AUTHOR-(02)-ZHURAVLEVA, L.V., REBRUNOV, V.P.

COUNTRY OF INFO--USSR

SOURCE--ZASHCH. METAL. 1970, 6(2), 224-7

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--ALUMINUM ALLOY, NITRIC ACID, MAGNESIUM ALLOY, ALLOY DESIGNATION, WELDABILITY, CORROSION RESISTANT/(U)ALAI ALUMINUM ALLOY, (U)AMG3 ALUMINUM MAGNESIUM ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0748 STEP NO--UR/0365/70/006/002/0224/0227

CIRC ACCESSION NO--AP0111941

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

2/2 030 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0111941

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ALLOY AMG PRIME3 CONTG. MG 3.65, MN 0.47, SI 0.77, FE 0.25, CU 0.4, ZN 0.066PERCENT IS NO LESS EFFICIENT WITH RESPECT TO ITS RESISTANCE TO CONCD. HNO SUB3 SOLNS. AND VAPORS THAN AL AL CONTG. SI 0.3, FE 0.14. CU 0.006PERCENT. AMG3 IS CHARACTERIZED BY A GOOD WELDABILITY, IS EASILY MACHINED, AND IS 2-2.5 TIMES MORE RESISTANT THAN AL AL. BY APPLYING AMG3 ALLOY INSTEAD OF AL AL USED UP TO NOW FOR THE MANUF. OF NITRIC ACID TANKS, IT WILL BE POSSIBLE TO LOWER AL CONSUMPTION BY 25-35PERCENT, TO REDUCE THE WT. OF THE TANK AND INCREASE ITS LOAD CAPACITY.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0"

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USSR

SULIMA, L. A., BONDAREV, V. B., MIROLYUBSKIY, V. M., REDCHENKO, V. I., KAYETKIN, R. A.

UDC: 681.333

"A Device for Modeling a Neuron"

Moscow, Otkrytiya, Izobretneiya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 48, Dec 73, Author's Certificate No 409245, Division G, filed 24 Apr 72, published 30 Nov 73, p 121

Translation: This Author's Certificate introduces a device for modeling a neuron. The device contains a power supply and integrators. As a distinguishing feature of the patent, the device is simplified by adding a balanced differential amplifier covered by negative and positive feedback loops. Connected to the first input of the amplifier are integrators and a scaling resistor unit and also switching elements whose controlling inputs are connected to the power supply. The first output of the balanced differential amplifier is connected to the output of the first switching element, while the second output of the balanced differential amplifier is connected to the output of the second switching element, which is connected in turn to the first switching element, to the zero potential line, and to the second input of the balanced differential amplifier.

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USSR

UDC: 661.143:546.48'221

SHCHUL'MAN, V. M., POPOV, V. P., REDCHENKO, V. T., VARAND, V. L., ZEGZHDA, T. V.

"A Thiourea Method of Synthesizing Cadmium Sulfide for Phosphors"

Sb. nauch. tr. VNII lyuminoforov i osobo chist. veshchestv (Collected Scientific Works of the All-Union Scientific Research Institute of Phosphors and Extra Pure Materials), 1971, vyp. 5, pp 144-150 (from RZh-Khimiya, No 7, Apr 72, Abstract No 7L175)

Translation: A hydrogen sulfide free method of synthesizing CdS is developed which is based on deposition of CdS from an aqueous solution of $CdSO_4$ by thiourea in the presence of NH_3. The resultant CdS contains 98% or more of the basic substance, and 10^{-4}% or less of heavy metal impurities (Fe, Cu, Ni and Co combined). The cadmium sulfide synthesized by the thiourea method is suitable for making luminescent compositions of various grades. The diagram for synthesis of cadmium sulfide is given. Bibliography of 13 titles. Resumé.

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USSR

UDC 669.187.2.083.4.621.365.2

POVOLOTSKIY, D. YA., GRECHIN, R. I., RECHKALOVA, A. V., KOFMAN, YY. V., and ROSHCHIN, V. YE.

"Behavior of Oxygen and Reauction Products in Vacuum-Arc Remelting"

Moscow, Stal', No 12, Dec 73, pp 1092-1095

Abstract: Low-carbon (0.03-0.09 % C) and carbon (0.20-0.70% C) steels were used for consumable electrodes in 5-ton arc furnaces for the purpose of studying oxidation and reduction processes in vacuum-arc remelting (VAR) and the behavior of inclusions. It was noted that in VAR, refining of the metal from deoxidation products occurs as a result of mechanical removal of inclusions and reduction of unstable oxides by carbon. Stable inclusions of complex shape (corundum crystals and grains) are more fully removed by mechanical means; however, the same does not hold true for inclusions of spherical shape (globular corundum and glasses) and unstable inclusions. New types of inclusions are formed in the VAR process. Non-equilibrium inclusions, which transfer from the initial metal into the VAR ingot change composition to a more equilibrium composition and change shape to a more idiomorphic form. The length of the refining period when melting the initial metal for VAR has

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POVOLOTSKIY, D. YA., et al., Stal', No 12, Dec 73, pp 1092-1095

little effect on oxygen and inclusion content, so that there are savings in keeping the refining time as short as possible. Six figures, seven bibliographic references.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

UDC 621.791.053:669.295:620.192.47

NIKIFOROV, G. D., Doctor of Technical Sciences, and PODCUTS, V. V., Engineer, Moscow Aviation Technological Institute

"Mechanism of Pore Formation in the Welding of Titanium Alloys"

Moscow, Svarochenoye Proizvodstvo, No 3, Mar 71, pp 49-51

Abstract: Samples of OT-4 titanium alloy were argon-arc welded with direct polarity d-c current with a tungsten electrode (without filler wire) in a pulsed-arc mode. Pulse time was in the limits of 0.8-1.12 seconds. It was determined that the main reason of pore formation in OT-4 alloy (and other titanium alloys) is hydrogen, which forms by the decomposition of moisture. In welding titanium alloys the process of metal bath degassing occurs in several stages and is characterized by the presence of peaks in the surve for the relationship of weld seam porosity to current pulse duration. By improving the quality of end surface preparation prior to welding the porosity in weld seams is significantly reduced.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

REDI, N. S., Leningrad Scientific Research Institute of Antibiotics

"Synthesis and Properties of the Antifungal Antibiotic Levorin"

Riga, Fiziologicheski i Opticheski Activnyye Polimernyye Veshchestva, "Zinatne," 1971, pp 187-190

Abstract: Copolymers of vinylpyrrolidone (VP) and vinyl amine (VA) were used for synthesis of water-soluble levorin preparations. The best organic solvent for these copolymers in the reaction with levorin was methanol. A methanol solution of VP and VA was added to levorin, followed by 30-40 min. mixing, vacuum-drying, dissolving the residue in water, and lyophilizing it after separation of unreacted levorin. The preparation yield was 40% with solubility of 50 mg/ml of water. The concentration of antibiotic in it was determined spectrophotometrically and by biological methods, using test cultures of Torula utilis. Toxicity of the levorin polymer complex depended on the VP:VA ratio, as was evident in experiments with mice injected with LD_{50}. When VP:VA was 80:20, the LD_{50} contained 48,000 units/kg mouse weight. In the case of VP:VA = 95:5 the LD_{50} was 65,000 units/kg. A single intravenous dose of 500 units of levorin complex kept the antibiotic concentration in the blood to 43 units/ml. in 1 hr, and to 8 units/ml. in 9 hr after injection. Only traces of it were found 12 hr after injection. The highest concentration of

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REDI, N. S., Fiziologicheski i Opticheski Activnyye Polimernyye Veshchestva, "Zinatne," 1971, pp 187-190

levorin in urine was 28 units/ml. in 3 hr, 2 units/ml. in 12 hr, and only traces of it in 24 hr after injection. Intramuscular injection of levorin complex into mice made its concentration in blood equal to 4, 12-20, and 7 units/ml. in 1, 3-6, and 24 hr, respectively, after injection. In 30 hr only traces of it were found in blood. The highest concentration of levorin in urine in this case was 17-30 units/ml. in 3-9 hr, and only 2-4 units/ml. in 48 hr, and none was found in 60 hr after injection. The water-soluble levorin complex can be used successfully in medical practice.

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REDINA, S. F.

Microelectronics.

JPRS 57333

25 October 1972

MICROELECTRONICS

Excerpts from Russian-language book edited by F. V. Lukin; Mikroelektronika, No 5, 1972, Sovetskoye Radio Publishing House, Moscow, UDC 621.382:621.396.6-181.5.

CONTENTS

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

logic (TTL) of monolithic integrated circuits and possessing commensurability with typical logic elements of low-power TTL of the integrated circuit. Evaluations are given for the possibility of accomplishing, on the basis of the surface-coated difference control element, variations of typical integrated subsystems in the TTL base.

The article contains 11 figures, 2 tables, and 6 bibliographic references.

UDC 681.325.65

Evaluation of the Influence of Echoes on the Distortion of Information Signals in Systems Using Integrated Circuits of Transistor-Transistor Logic (TTL). Dolkart, V.M., Novik, G.Kh., and Radina, S.F., In the Collection Mikroelektronika, edited by T.V. Lukin, No 5, P 227, Sovetskoye Radio Publishing House, 1972.

Construction of reliable computer systems and devices on high-speed integrated circuits is possible only with the proper solution to the problem of matching integrated circuits with the connecting transmission lines. The article evaluates distortions in information signals in transmission lines connecting integrated circuits of the transistor-transistor logic.

The article contains 10 figures and 3 bibliographic references.

UDC 621.382.8.621.372.2

Propagation of Impulses in Nonuniform Lines With Variable Parameters. Gurevich, G.S. and Orlikovskiy, A.A. In the Collection Mikroelektronika, edited by T.V. Lukin, No 5, P 243, Sovetskoye Radio Publishing House, 1972.

For a nonuniform line with variable parameters of a common type the authors establish the relationships for the duration of the impulse and the rate of propagation of the fronts. They obtain expressions for energy, current, voltage, and power of an infinitely fine impulse. They evaluate the energy of an impulse of finite duration. The obtained results permit justifiably continuing computation of the interelement connections of major integrated circuits and designing of integrated circuits with the conversion of the impulse duration and distributed amplification.

The article contains 1 figure and 4 bibliographic references.

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USSR UDC 621.791.053:669.295:620.192.47

NIKIFOROV, G. D., Doctor of Technical Sciences, and REDCHITS, V. V., Engineer, Moscow Aviation Technological Institute

"Mechanism of Pore Formation in the Welding of Titanium Alloys"

Moscow, Svarochenoye Proizvodstvo, No 3, Mar 71, pp 49-51

Abstract: Samples of OT-4 titanium alloy were argon-arc welded with direct polarity d-c current with a tungsten electrode (without filler wire) in a pulsed-arc mode. Pulse time was in the limits of 0.8-1.12 seconds. It was determined that the main reason of pore formation in OT-4 alloy (and other titanium alloys) is hydrogen, which forms by the decomposition of moisture. In welding titanium alloys the process of metal bath degassing occurs in several stages and is characterized by the presence of peaks in the surve for the relationship of weld seam porosity to current pulse duration. By improving the quality of end surface preparation prior to welding the porosity in weld seams is significantly reduced.

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Acc. Nr.: AP0029428 Ref. Code: UR 0297

PRIMARY SOURCE: Antibiotiki, 1970, Vol 15, Nr 1, pp 19-21

ANTIBIOTIC PROPERTIES OF 2,4-DIACETYLFLUOROGLUCINE PRODUCED BY PSEUDOMONAS FLUORESCENS, STRAIN 26-o

Reddi, T.K.K.; Borovkov, A.V.

National Institute for Agricultural Microbiology, Leningrad

2,4-Diacetylfluoroglucine is a metabolite of a soil bacterium Pseudomonas fluorescens. It has a high antibiotic activity against grampositive bacteria and actinomycetes. Gramnegative bacteria, fungi and yeasts were not or slightly sensitive to the substance.

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REEL/FRAME

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REDENKO, YU. N.

Technical Sciences

JPRS 53112
9 MAY 71

OPTIMIZATION AND CONTROL OF LARGE POWER ENGINEERING SYSTEMS

(Excursion Session and All-Union Symposium in Irkutsk)

[Article by Candidate of Technical Sciences [illegible] Redenko]

Moscow, Vestnik Akademii Nauk SSSR, Russian, Vol 40, No 3, March 1971, pp 116-117]

On 28 September - 1 October 1970 an excursion session of the Department of Physicotechnical Problems of Power Engineering of the AS USSR and an All-Union symposium devoted to problems of the optimization and control of large power engineering systems were held in Irkutsk. Representatives of over 70 scientific research, planning and operational organizations of various ministries and departments of the country gathered there.

A broad discussion of that problem was held for the first time and the Siberian Power Engineering Institute of the Siberian Department, AS USSR, was organized. The need for such discussion was brought about by the continuous intensification of the economic and technical interconnections between individual specialized power engineering systems (electric power engineering, including the supplying of heat, gas, petroleum and coal, and atomic power engineering) which form the system of the [illegible] and energy economy of the country (the overall power engineering system).

At sessions of the meetings and symposia there were discussions of general questions of the theory of large artificial systems, of the main properties of large power engineering systems, methodical questions in the construction of mathematical models in the optimization and control of large power engineering systems, and questions of automatic programming.

Specialists of various directions became acquainted with the level and results of investigations conducted in that area

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The discussion showed that at the present time in power engineering the application of methods of mathematical modelling has become widespread for the solution of optimization tasks. They are used very successfully in the optimization of the fuel and energy balance for the overall energy system of the country, in the planning and operation of electric power systems, in heat supply systems, and in the selection of optimal parameters of heat and power installations. Similar work is being developed with respect to gas and petroleum supply systems and in the coal industry. Considerable attention is being given to the systems approach to power engineering, as well as to the totality of large developing systems. The basic principles have been established for a real hierarchy of these systems and their interconnections.

However, the work done does not embrace all the problems of complex optimization of the development of the power engineering economy and its optimal control. The optimization of separate specialized systems at times is done without due coordination of them both with one another and on different territorial and time levels. The real accuracy and the properties of available information are not taken sufficiently into account. Insufficient attention is given to distinctive features in the practical implementation of optimal solutions found. Still very indefinitely defined is the role of mathematical methods, technical means of automation and people in the control of various power engineering systems. Some of the work done on the application of mathematical methods in power engineering is excessively theoretical and does not always take into consideration the demands of practice and existing engineering developments.

The exchange of opinions on the discussed questions permitted determining the main tasks in that area for the very near future. They include the creation of a mutually coordinated complex system of mathematical models which corresponds to the real hierarchical structure and real properties of large power engineering systems and the creation, and also to extensively develop theoretical and practical work on the improvement of the system of gathering and processing and transmission of data and the analysis of the total error of the information and its influence on the error of the solutions. An important task is expansion of investigations connected with the scientific principles, practical methods and means of unified optimal control of the functioning and development of the power engineering of the country in its broad sense, including automated systems for the control of continuous processes taking place in the systems. To solve the enumerated tasks it is necessary to

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develop in all possible ways the corresponding mathematical and calculating methods and special mathematical models using the methods of statistical modelling, to develop investigations on automatic programming and the theory of mass servicing, etc. Of essential importance is study of the external connections of large power engineering systems with other systems of the national economy and with the biosphere, the solution of a number of economic problems of optimal control (criteria of optimality, horizontal levels of control of the national economy, the methodology of construction of closing calculated expenditures and price formation, etc), and the creation of a computer base and of technical means of control, including a network of computer centers.

The participants in the symposium and session expressed the unanimous opinion that it is necessary to arrange the coordination of work connected with the construction of a single system for control of the fuel and energy economy of the country.

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USSR

UDC 621.357.1.035(088.8)

VORONIN, T. I., IVANOV, YU. S., and REDIKUL'TSEV, YU. V., All-Union Scientific Research Biotechnological Institute

"Reactor Electrolyzer"

USSR Patent Certificate No 312869, Filed 4 Apr 70, Published 22 Nov 71 (from Referativnyy Zhurnal -- Khimiya, Svodnyy Tom, No 23(II), 1972, Abstract No 23L222P)

Translation: A reactor-electrolyzer is patented, which can be used, for example, for the cultivation of the water-oxidizing bacteria. The electrolyzer consists of electrodes situated along the longitudinal cell axis, with a gap between them to facilitate the mixing of the culture medium. This location of electrodes produces higher yields of O_2 and H_2 during the electrolysis and the mass exchange process is intensified.

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1/2 015 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--CONTINUOUS THERMAL DESORPTION OF HYDROCARBONS IN MOVING LAYERS OF ZEOLITES -U-

AUTHOR-(04)-PLACHENOV, T.G., REDIN, V.I., SEBALLO, A.A., SHIRYAYEV, A.N.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(5), 1047-51

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--DESORPTION, CARBON DIOXIDE, BENZENE, ZEOLITE, OCTANE, HYDROCARBON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/1500 STEP NO--UR/0080/70/043/005/1047/1051

CIRC ACCESSION NO--AP0133501

UNCLASSIFIED

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

2/2 015 UNCLASSIFIED PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0133501

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESORPTION BY CO SUB2 OF ISOOCTANE AND C SUB6 H SUB6 ON NAX ZEOLITE AND OF N-OCTANE ON CAA ZEOLITE MOVING CONTINUOUSLY THROUGH ADSORPTION AND DESORPTION COLUMNS OF THE SAME DIAM. WAS STUDIED. AT 0.5-2.5 L.-MIN, CO SUB2 INPUT RATE HAD ALMOST NO EFFECT ON THE DEGREE OF DESORPTION. AT SIMILAR TO 300DEGREES AND CONCNS. OF 15.6, 20.2, AND 9.1 MG, RESP., HYDROCARBON-L. AIR FLOWING INTO THE DESORPTION COLUMN, DYNAMIC ACTIVITY OF THE ZEOLITES WAS 100.3, 130, AND 58.9 MG-G, DESORPTION WAS QUANT., AND 85PERCENT OF THE DESORBED HYDROCARBONS WAS CONDENSABLE.

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USSR

UDC 51

SEMENOV, Ye. V., KARPILOVSKIY, Ye. B., REDIN, Yu. A.

"Organization of the Repair of Basic Equipment Using Mathematical Methods"

Tr. VINII Moloch. prom-sti (Works of the All-Union Scientific Research Institute of the Dairy Industry), 1972, No. 28, pp 25-36 (from RZh-Matematika, No 11, Nov 72, Abstract No 11V488)

Translation: Problems of the organization of repair work in enterprises using exact methods in which linear programming is used are discussed. Several simple examples are calculated. Authors abstract.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

UDC: 51

SEMENOV, Ye. V., KARPILOVSKIY, Ye. B., REDIN, Yu. A.

"Organization of Repair of Basic Equipment Using Mathematical Methods"

Tr. VNII Moloch. Prom-sti [Works of All-union Scientific Research Institute of the Milk Industry], 1972, No 28, pp 25-36 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V488; by the authors)

Translation: Problems of organization of repair work at enterprises using precise methods are studied. The apparatus of linear programming is used. Several simple examples are calculated.

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USSR

UDC: 681.325.65

DOLKAR, V. M., NOVIK, G. Kh., STEPANOV, V. I., REDINA, S. F.

"A Pulse Shaper"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 12, Apr 71, Author's Certificate No 299957, Division H, filed 2 Apr 70, published 26 Mar 71, p 210

Translation: This Author's Certificate introduces a pulse shaper which contains two flip-flops and an AND-OR-NOT gate. As a distinguishing feature of the patent, pulses of constant length with a short delay are produced by connecting the set terminals of the flip-flops to the input of the device and to the first input of the first AND circuit in the gate. The second input of this AND circuit is connected to the one-output terminal of the first flip-flop, the reset terminal of this flip-flop being connected to the output of the gate and the output of the device, while its zero-output terminal is connected to the reset terminal of the second flip-flop. The one-output terminal of the second flip-flop is connected to the input of the second AND circuit in the gate.

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UDC: 621.374.33

USSR

DOLKAR, V. M., NOVIK, G. Kh., REDINA, S. F., STEPANOV, V. N.

"A Pulse Shaper"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 12, Apr 71, Author's Certificate No 299959, Division H, filed 30 Jan 69, published 26 Mar 71, p 210

Translation: This Author's Certificate introduces a pulse shaper based on transistor-transistor logic elements and on a transistor with a timing capacitor connected to its base. Connected in the collector circuit are a resistor and a diode. The shaper also contains two feedback circuits. As a distinguishing feature of the patent, pulse rise and fall times are reduced for long pulses at the output by connecting the first feedback circuit between the collector of the transistor and the element connected to the timing capacitor, while the second feedback circuit is connected between the anode of the above-mentioned diode and the element connected to the shaper input.

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UDC 51.621.391

USSR

RED'KIN, N. P.

"Proof of Minimality of Certain Circuits of Functional Elements"

Probl. Kibernetiki [Problems of Cybernetics -- Collection of Works], No. 23, Moscow, Nauka Press, 1970, pp 83-101 (Translated from Referativnyy Zhurnal Kibernetika, No. 4, April, 1971, Abstract No. 4 V476 by G. Blokhina).

Translation: An analysis is presented of realizations of Boolean functions by circuits of functional elements in a base consisting of conjunction, disjunction and negation. Complexity L(S) of circuit S means the number of elements in S. The least complexity of circuits realizing f is referred to as the complexity of f and is represented by L(f). The circuit realizing function f is called minimal if L(S)=L(f).

Theorem 1. If $x_n)=x_1+x_2+\ldots+x_n \pmod 2),\ n\geq 2,$

then $L(f_n)=L(\overline{f}_n)=4(n-1)$.

The comparison operator F_n compares 2 · n-digit binary numbers $\tilde{x}$ and $\tilde{y}$: F_n $(\tilde{x}, \tilde{y})$ is equal to 1 if $\tilde{x}<\tilde{y}=0$ if $\tilde{x}\geq\tilde{y}$.

Theorem 2. For any $n\geq 1$, $L(F_n)\geq 5n-3$.

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UDC 51.621.391

RED'KIN, N. P., Probl. Kibernetiki, No. 23, Moscow, Nauka Press, 1970, pp 83-101.

The coincidence operator R_n compares to n-digit binary numbers $\tilde{x}$ and $\tilde{y}$: $R_n(\tilde{x}, \tilde{y})=1$ if $\tilde{x}=\tilde{y}$ and $R_n(\tilde{x}, \tilde{y})=0$ if $\tilde{x}\neq\tilde{y}$.

Theorem 3. For any $n\geq 1$, $L(R_n)=5n-1$.

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UDC: None

USSR

ZASHKVARA, V. V., KORSUNSKIY, M. I., RED'KIN, V. S., and CHOKIN, K. Sh.

"Interpreting Energy Loss Peaks of 30-70 ev in the Spectra of Electrons Reflected from Transitional Metals"

Leningrad, Fizika Tverdogo Tela, vol 14, No 7, 1972, pp 2182-2184

Abstract: For transitional metals, whose spectra of characteristic electron energy losses are more complex than those of such ordinary metals as Na or Al, only the initial sections of these spectra, in the 25-30 ev interval, can be explained by plasma-type losses. The interpretation of the more distant portions of the spectra, where the spectral shape is determined by factors in addition to multiple and combination plasma losses, is more difficult. In this brief communication, the authors attempt such an interpretation through the idea that the loss peaks in the spectra, which they call e-peaks, can be identified by comparing the energy position of the e-peak with the total energy required for excitation of the 4p-4d transition and of low-energy plasma oscillation, for each element of the Y-Pd series. A table of energy values for this series is given. The authors are associated with the Institute of Nuclear Physics at Alma-Ata.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR UDC: 539.292

TSVEYMAN, Ye. V.; KORSUNSKIY, M. I., Academician of the Kazakh Academy of Sciences; ZASHKVARA, V. V., and RED'KIN, V. S.

"Auger Electron Spectra for Some Rare-Earth Metals"

Moscow, Doklady Akademii Nauk SSSR, vol 204, No 4, 1972, pp 828-830

Abstract: Because no spectra of Auger electrons for the rare-earth metals have as yet been made, the authors have developed them for elements Pr, Nd, Gd, Dy, Yb, La, and Hf in an energy range of up to 530 ev. All of the metal specimens, except the Hf, were of rolled film 0.3-0.5 mm thick. The Hf specimen was made of the powdered metal pressed and then sintered at a temperature of 1500° C in a $2 \cdot 10^{-6}$ mm Hg vacuum for several hours. The excitation of the Auger electrons was done by an electron beam of 1-2 mA and 1.6 kev directed at right angles to the specimen surface, and the secondary electrons were recorded by an electrostatic energy analyzer of the cylindrical mirror type. The spectra of these metals is plotted and a table comparing the experimentally measured and the computed peak energies is presented. The authors are associated with the Institute of Nuclear Physics, Kazakh Academy of Sciences, Alma Ata.

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USSR

TSVEYMAN, Ye. V., RED'KIN, V. S., ZASHKVARA, V. V., KORSUNSKIY, M. I., Institute of Nuclear Physics, Academy of Sciences of the Kazakh SSR, Alma-Ata

"Spectra of Characteristic Losses of Electron Energy in Gadolinium and Dysprosium"

Leningrad, Fizika Tverdogo Tela, Vol 13, No 9, Sep 71, pp 2793-2795

Abstract: The method of reflection of a primary electron beam from massive specimens is used to determine the spectrum of characteristic losses of energy in the rare-earth elements Gd and Dy. Measurements of the spectra for different primary electron energies in the 150-600-ev range were taken at scattering angles of 39 and 141° on an electrostatic β-spectrometer. Energy resolution of the instrument was 0.25 percent. The presence of oxide contaminants on the surface of the specimen was determined from the Auger peak of oxygen. It was found that when the specimens were heated to a temperature of about 1000°C in a vacuum of $5 \cdot 10^{-6}$ mm Hg, there is a noticeable reduction in the intensity of this peak (more pronounced in Gd), which shows a considerable reduction in oxygen concentra-

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TSVEYMAN, Ye. V. et al., Fizika Tverdogo Tela, Vol 13, No 9, Sep 71, pp 2793-2795

tion on the surface of the specimens. The peaks which appear on the spectra are interpreted as energy losses due to excitation of plasmons on the surface of the metal, on the surface of the oxide, in the body of the metal, at the metal-vacuum interface, etc. Two figures, bibliography of six titles.

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RED'KIN, V. S., ZASHKVARA, V. V., KORSUNSKIY, M. I., TSVEYMAN, Ye. V.,
Institute of Nuclear Physics of the Academy of Sciences Kazakh SSR, Alma-Ata

"Energy Spectrum of Auger Electrons of Osmium Up to Energies of 300 ev"

Leningrad, Fizika Tverdogo Tela, No. 5, May 71, pp 1511-1513

Abstract: The spectrum of Auger electrons of osmium was obtained up to energies of 300 ev using an electrostatic energy analyzer of the cylindrical mirror type which had been used earlier to measure the spectra of characteristic energy losses of electrons in certain metals of the transition groups. The resolution of the spectrometer was 0.3%. A graph of the spectrum shows ten fairly well defined peaks located on the line of decreasing background intensity of the inelastically scattered electrons. It was established that the energy position of the observed peaks does not change with a change in the energy of the primary electron beam from 1 to 2.4 kev, thus making it possible to interpret the majority of the peaks as excitation of Auger transitions. A triplet of low intensity peaks in the energy range 260-240 ev is interpreted as *KLL* Auger transitions excited in residual carbon contamination of the surface of the sample. A group of

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RED'KIN, V. S., et al, Fizika tverdogo tela, No. 5, May 71, pp 1511-1513

peaks in the osmium spectrum with energies 153, 158, and 167 ev is interpreted as belonging to the *NNN* series of transitions. A table is given showing the experimental values of the energy of transitions of the *NNN* series increased by the magnitude of the work function for an electron from osmium (~5 ev), and these values are compared with energies calculated on the basis of tables of the energy levels in osmium. Peaks observed at 215 and 228 ev are interpreted as possible $N_V N_{VI} O_V$ (221 ev) and $N_{IV} N_{VI} O_V$ (238 ev). It was difficult to identify low-energy peaks at 9 and 21 ev, and these require additional study.

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SOTNIKOV, V. G., RED'KIN, V. S., ZASHKVARA, V. V., CHAYKOVSKIY, E. F., KORSUNSKIY, M. I.

"Decrease in Carbon Concentration in Surface Layers of Mo_2C and W_2C"

Leningrad, Fizika Tverdogo Tela, No. 4, Apr 71, pp 1058-1061

Abstract: The characteristic energy loss spectrum of Mo_2C and W_2C samples was studied by the method of reflecting a primary beam of electrons of 800 ev energy for two scattering angles 39 and 141°. The samples were made by high-temperature heating of polycrystalline strips of pure Mo and W in benzene vapors. In taking the spectra the samples were heated up to 800, 1250, 1600, 1800, and 2000°C in a vacuum of 10^{-6} torr. It was established that an increased concentration of hydrogen is contained in the surface layer in the initial samples. In the process of high-temperature heating of the samples there is observed desorption of carbon from the surface layer, with the result that the concentration composition of the surface layer approaches the pure metal (Mo, W). When the temperature is raised to 2000°C and the sample is held for one and one-half hours at this temperature, the desorption of carbon from the surface layer continues until the stability of

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SOTNIKOV, V. G., et al, Fizika tverdogc tela, No. 4, Apr 71, pp 1058-1061

the characteristic energy loss spectrum obtained for the scattering angle of 141° indicates the relative stability of the concentration content of carbon in deep layers of the samples.

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Nuclear Physics

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UDC 537.533.331

ZASHKVARA, V. V., KORSUNSKIY, M. I., RED'KIN, V. S., and LAVROV, V. P., Institute of Nuclear Physics of the Academy of Sciences Kazakh SSR, Alma-Ata

"Ion-Optical Properties of an Electrostatic Energy Analyzer for Beams of Charged Particles With Focusing of the Ring-Axis Type"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, No 12, Dec 70, pp 2591-2592

Abstract: A calculation of the ion-optical characteristics of a cylindrical analyzer providing ring-axis focusing for various angles of entry of the beam into the region of the field is presented. The property of cylindrical analyzer to depict a thin ring source placed on the surface of the inner cylinder at a point on the axis of symmetry is denoted by the term "focusing of the ring-axis type." Formulas are given for the relative focus distance, the coefficient of relative linear dispersion with respect to energy, the quadratic angular aberration coefficient, and the cubic angular aberration coefficient. Graphs of these functions are given. They show that focusing of the ring-axis type of the first order with respect to angular divergence of the beam in an electrostatic analyzer with a cyclindrical field can be achieved over a wide range of angles of entry of the beam of charged particles.

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ZASHKVARA, V. V., et al, Zhurnal Tekhnicheskoy Fiziki, No 12, Dec 70, pp 2591-2592

The angle of entry of 39° is of particular interest, since under these conditions the quadratic angular aberration is equal to zero and close to the minimum value of the cubic angular aberration.

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REDKIN V.S.

Acc. Nr: AP0048299 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code: UR0181

94384q Spectrum of electron characteristic energy losses in osmium. Zashkvara, V. V.; Korsunskii, M. I.; Larin, M. P.; Red'kin, V. S.; Masyagin, V. E.; Kil'diyarov, M. A.; Chokin, K. Sh. (Inst. Yad. Fiz., Alma-Ata, USSR). *Fiz. Tverd. Tela* 1970, 12(1), 294-6 (Russ). The spectrum was obtained of characteristic energy losses of electrons in Os. The spectrum was obtained by reflecting a beam of electrons with energy 0.6-1.4 keV from a plane surface of a massive specimen. The energy losses detd. from the max. of the peaks are 11.4, 29.8, 46.5, and 58 eV for a scattering angle of 141°, and 11.3, 24.5, 45.2, and 57.4 eV for a scattering angle of 39°. The peak of the 1st loss is interpreted as the loss of energy for excitation of surface plasma oscillations, and the 2nd loss, as the energy loss for excitation of vol. plasma oscillations in Os. A. Libackyj

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ZASHKVARA, V. V., KORSUNSKIY, M. I., LARIN, M. P., RED'KIN, V. S., MASYAGIN, V. YE., KUL'DIYAROV, M. A., and CHOKIN, K. SH., Institute of Nuclear Physics of the Kazakh Academy of Sciences, Alma-Ata (Institut yadernoy fiziki AN Kaz SSR, Alma-Ata)

"Spectrum of Characteristic Energy Losses of Electrons in Osmium"

Leningrad, Fizika Tverdogo Tela, Vol 12, No 1, January 1970, pp 294-296

Abstract: The authors obtained a spectrum of characteristic energy losses of electrons in osmium. This is the first time this has been done and should contribute information about the third transition metal group. The spectrum was produced by reflecting an electron beam with an energy of 0.6-1.4 kev off a flat surface of a massive specimen. Energy analysis of the scattered electrons was carried out by using an electrostatic beta-spectrometer with a cylindrical field. The resolving power of the spectrometer was 0.2%. The spectrum was obtained for two different angles of scattering for the primary beam of electrons. In the first case the beam of primary electrons falls normally to the specimen surface and electrons which had been scattered at a 141° angle in the specimen enter the beta-spectrometer. In the second case the angle between the direction of the primary beam and the specimen surface is 19°30' with electrons analyzed which had been scattered at 39°. The osmium specimen was 0.3 mm thick and was made from low-dispersion powdered osmium pressed and subsequently cintered above 2000°C in a $2 \cdot 10^{-6}$ torr vacuum for several hours. The spectrum was produced without disturbing the vacuum

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ZASHKVARA, V. V., et al., Fizika Tverdogo Tela, Vol 12, No 1, January 1970, pp 294-296

at the above temperature, with registration of electrons scattered at a 39° angle. It was shown that the osmium spectrum did not change with a fall in temperature down to 1400°C. The position of the specimen was changed for taking a spectrum at an angle of 141°. This required disturbing the vacuum. The latter spectrum was produced at a specimen temperature of 1700°C in a $2 \cdot 10^{-6}$ torr vacuum. A graph is given for the two spectra. Energy losses in electron-volts as determined from curve peaks are as follows: (141° angle of scattering) 11.4, 29.8, 46.5, 58; and (39° angle of scattering) 11.3, 24.5, 45.2, 57.4. The energy position of the first loss does not change with the angle of scattering. The ratio of the height of the first peak to the height of the second loss peak decreases as the angle of scattering increases and with increased primary beam energy. At a specimen temperature below 1300°C, the height of the first loss peak falls significantly and reaches 9.7 ev. This may be interpreted as energy lost in exciting surface plasma oscillation. At the same time, the energy loss does not coincide with theory. A significant discreptancy (on the order of 5 ev) exists in the energy position of the second loss peak. This is probably conditioned by excitation of volume plasma oscillation in the osmium for 141° and 39° scattering angles. Energy calculated for

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ZASHKVARA, V. V., et al., Fizika Tverdogo Tela, Vol 12, No 1, January 1970, pp 294-296

a volumetric plasmon using the Langmuir formula with the supposition that all eight s and d are free and form a homogeneous electron gas yields 28.6 ev. This value does not correspond to the second peak energy position obtained in this study. The origins of the remaining peaks in the osmium spectrum are also unclear.

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ZASHKVARA, V. V., KORSUNSKIY, M. I., RED'KIN, V. S., Institute of Nuclear Physics, Academy of Sciences Kazakh SSR, Alma-Ata.

"Electron Characteristic Energy Loss Spectra In Ru, Rh, and Pd"

Leningrad, Fizika Tverdogo Tela, Vol 12, No 4, April 1970, pp 1270-1271

Abstract: A previous work by these three authors plus V. Ye. Masyagin (FTT, 11, 3667, 1969) discusses the electron characteristic energy loss spectra in Y, Zr, Nb, and Mo obtained by the method of reflection of the primary beam of electrons with energies on the order of 1 kev for two scattering angles (39 and 141°). In the present work an analogous investigation is conducted for the metals Ru, Rh, and Pd. The results obtained, in combination with the results of the previous work, make it possible to obtain a representation of the distinctive features in the spectra of the electron characteristic energy loss in metals of all series of the second transition group (with the exception of Tc) observed for two scattering angles (39 and 141°). The method of preparing the specimens of Ru, Rh, and Pd is described. The authors thank Ya. Ye. Genkin, M. P. Larin, and V. Ye. Masyagin for assistance in fulfillment of their work. 1 graph, 1 table, 5 ref. Received by the editors 12 December 1969.

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ZASHKVARA, V. V., TSVEYMAN, Ye. V., KORSUNSKIY, M. I., RED'KIN, V. S.

"Spectra of Characteristic Energy Losses for Electrons Reflected From Surfaces of La, Ce, Pr, and Nd"

Leningrad, Fizika Tverdogo Tela, Vol 14, No 6, Jun 72, pp 1812-1814

Abstract: Electron reflection spectra are studied for La, Ce, Pr, and Nd. The specimens were heated in a vacuum to temperatures close to their melting point to clean the oxides from the surface. Spectra of characteristic energy losses are given for a primary electron energy of 300 ev and specimen temperature of 850°C in the range of energy losses of 0-50 ev. The results are compared with inelastic scattering spectra obtained previously for Gd and Dy. It is found that the La spectrum is similar to that of Gd, but with a more complex structure at energies above 15 ev. The spectra of the other three lanthanons are similar to that of Dy. The La spectrum shows maxima at 5.3, 10.2, and 22.1 ev which are not observed in the spectra of Ce, Pr, and Nd. Comparison with the analogous spectrum for barium indicates that the most intense peaks, observed at 8-9 ev, may be the result of losses to excitation of volumetric plasma oscillations in the metals. Interpretation of the remainder of the spectra is less clear.
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USSR

UDC 621.357.1:661.418(088.8)

KONONCHUK, T. I., KISELEV, G. P., RED'KO, L. P., BONDARENKO, N. V. SHAKHNOVSKAYA, M. Z.

"electrolytic Method of Preparing Chlorine and Alkali Using a Mercury Cathode"

Translation: A patent has been issued for an electrolytic method of preparing Cl_2 and alkali using an Hg-cathode and introducing into the electrolyte additives which promote a reduction in the liberation of H_2 in the bath. To expand the variety of additives, polyacrylamide is used as an additive in amounts of 0.01-10 mg/liter. Data characterizing the action of polyacrylamides of various specimens on the extent of reduction of hydrogen liberation are cited.
V. N. Kudryavtsev

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

UDC: 621.315.592

BRAILOVSKIY, Ye. Yu., BRUDNYY, V. N., KRIVOV, M. A., and RED'KO, V. B.

"Optical Absorption Spectra of n-GaAs Irradiated by Large Integral Electron Beams"

Leningrad, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 2075-2077

Abstract: A description is given of experiments in which the optical absorption spectra of n-GaAs in the region of 0.5-1.5 ev, bombarded by electrons of energy 1.6-1.8 mev at temperatures of 80-100° C, were measured. The original specimens were alloyed with tellurium and had electron concentrations of $1-2\cdot10^{16}/cm^3$ at T = 300° K. Transmission spectra were obtained at temperatures of 80 and 300° K, and the absorption spectra were calculated from them with the reflection coefficient taken at 0.3. As a result of the irradiation, the electron concentration in the specimens dropped, and the Fermi level tended toward the middle of the forbidden zone. Curves are plotted for the specific electron conductivity of the specimens and for the characteristic absorption spectra of the n-GaAs irradiated with electrons at a dosage of $3.8\cdot10^{18}$ electrons per cm^2.

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USSR UDC 616-036.882-08:615.471:616.127:616-089.583.29

MEShALKIN, Ye. N., BED'KO, Ye. S., STUNZhA, Ye. A., SADChIKOV, I. V., FILIMONOV, Ye. S., and SERGEYEV, Ye. N., New Siberian Scientific Research Institute of the Pathology of Circulation, Ministry of Health RSFSR

"Resuscitation of the Organism After Prolonged Clinical Death by Means of an Artificial Circulation Apparatus in Association With Hemodilution and Hypothermia"

Kiev, Vrachebnoye Delo, No 4, 1973, pp 73-77

Abstract: To refine the method, experiments were conducted on 72 anesthetized dogs in which uni- or bilateral thoracotomy was performed and clinical death (disappearance of EEG waves) caused by discontinuation of artificial respiration and induction of cardiac arrest. Eight to 18 min after clinical death, resuscitation was begun with blood flow maintained by a pump either through the coronary and carotid arteries or through the whole body at rates of 60-120 ml/kg/min, under normothermia or hypothermia, with utilization of heparinized donor blood or a plasma expander to achieve hemodilution. The total perfusion time was 40-60 min. Resuscitation was considered successful if normal EEG, effective heart activity, spontaneous respiration, renal function, motor activity, and unconditioned and some conditioned reflexes were restored. The

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MESHALKIN, Ye. N., et al., Vrachebnoye Delo, No 4, 1973, pp 73-77

optimal conditions -- whole-body perfusion at a rate of 80-100 ml/kg/min, with blood diluted to about 6-8 g% Hb, and a hypothermia of 28-30°C achieved in 5-8 min -- yielded a recovery rate of 80%. This method was subsequently applied on 19 patients during cardiac surgery complicated by cardiac arrest and failure of all other therapeutic measures. Five patients were successfully resuscitated; they recovered and were eventually discharged from the hospital in satisfactory condition. The case history of a 12-year old cardiac surgery patient is given.

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1/2 028 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--SPECTRA OF CHARACTERISTIC ELECTRON LOSSES IN RUTHENIUM, RHODIUM, AND PALLADIUM -U-

AUTHOR-(03)-ZASHKVARA, V.V., KORSUNSKY, M.I., REDKON, V.S.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA TVERDOGO TELA, APR, 1970, 12, (4), 1270-1271

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ELECTRON SPECTRUM, ELECTRON SCATTERING, ANGULAR DISTRIBUTION, RUTHENIUM, RHODIUM, PALLADIUM, ELECTRON PLASMA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1796 STEP NO--UR/0181/70/012/004/1270/1271

CIRC ACCESSION NO--AP0129164

UNCLASSIFIED

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CIRC ACCESSION NO--AP0129164 PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHARACTERISTIC ELECTRON ENERGY LOSS SPECTRA OF RU, RH, AND PD WERE PLOTTED; EACH SHOWED SEVERAL PEAKS IN THE RANGE 5-80 EV. THE FIRST TWO (LARGEST) ENERGY LOSSES WERE IDENTIFIED AS BEING OF A PLASMA NATURE. ON PASSING FROM A SCATTERING ANGLE OF 40 TO 140DEGREES, THE POSITION OF THE FIRST LARGE PEAK REMAINED CONSTANT, BUT THAT OF THE SECOND MOVED IN THE HIGH ENERGY DIRECTION. PEAKS IN THE NEIGHBOURHOOD OF 50 EV WERE ATRRIBUTED TO IONIZATION AND OTHERS AT 60 EV TO TWO FOLD PLASMA EXCITATION.

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USSR

UDC 537.311.33:546.19'681

ARIYOV, M.A., BRUDNYY, V.N., KALYADOV, S.V., MELEV, V.G., RAMAZANOV, P.YE., REDKO, V.P.

"Effect Of Electron (1.5 Mev) And Proton (5 Mev) Irradiation On Electrical, Optical, And Photoelectric Characteristics Of Gallium Arsenide"

V sb. Radiats. fiz.nemet. kristallov (Radiation Physics Of Nonmetallic Crystals-Collection Of Works), Vol 3, Part 2, Kiev, "Nauk.dumka," 1971, pp 16-21 (from RZh--Elektronika i yeye primeneniya, No 10, October 1971, Abstract No 10B49)

Translation: The paper studies the spectra of radiation defects created by electrons (1.5 Mev) and protons (5 Mev) at temperatures close to 300° K, their resistance to annealing, and also the effect of Cu impurity on the spectra of the levels originating after irradiation. GaAs of n- and p-type was used with carrier concentrations of $5 \cdot 10^{15}$ -- 10^{18} cm^{-3}. The mobilities for n- and p-type specimens at a temperature of 300° K were 2200--4500 cm^2v^{-1} and 140-330 $cm^2v^{-1}sec^{-1}$, respectively. The GaAs was doped with Te and Zn and part of the material was specially not doped. 3 ill. 7 ref. I.V.

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1/2 016 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--PULSATING AURORAE IN CONJUGATE POINTS -U-

AUTHOR-(05)-GOKHBERG, M.B., KAZAK, B.N., RASPOPOV, O.M., REDLUGIN, V.K., TROYTSKAYA, V.A.

COUNTRY OF INFO--USSR

SOURCE--GEOMAGNETIZM I AERONOMIIA, VOL. 10, NO. 2, 1970, P. 367-370

DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--AURORA, PULSATION, GEOMAGNETIC FIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0156

STEP NO--UR/0203/70/010/002/0367/0370

CIRC ACCESSION NO--AP0119152

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CIRC ACCESSION NO--AP0119152 PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE FEATURES ACCOMPANYING (IN MAGNETICALLY CONJUGATE POINTS) THE ONSET OF PULSATING AURORAE CONSISTING OF INDIVIDUAL SPOTS ABOUT 10 KM IN EXTENT AND SEVERAL SECONDS IN DURATION. SIMULTANEOUS FIELD RECORDINGS AND PHOTOGRAPHIC OBSERVATIONS CONDUCTED IN 1968 IN SOGRA AND KERGUELEN SHOW THAT INDIVIDUAL FLARES OF PULSATING AURORAE ARISE WITHIN ONE SECOND OF EACH OTHER AT THESE POINTS. HOWEVER, EVEN IN THE CASE OF A SIMULTANEOUS ONSET THESE PULSATIONS ARE NOT MUTUALLY CORRELATED, AND IT IS CONCLUDED THAT THEIR SOURCES HAVE A LOCAL NATURE. FACILITY: AKADEMIIA NAUK SSSR, INSTITUT FIZIKI SEMLI, MOSCOW. FACILITY: AKADEMIIA NAUK SSSR, POLIARNYI GEOFIZICHESKII INSTITUT, MURMANSK. FACILITY: LENINGRADSKII GOSUDARSTVENNYI UNIVERSITET, LENINGRAD, USSR.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202620016-0

USSR

UDC: 621.319.4

REENE, V. T.

"Film Capacitors With Synthetic Organic Dielectric"

Plenochnyye kondensatory s organicheskim sintetichskim dielektrikom. Izd. 2-ye, pererab. i dop. (cf. English above. Second Revised and Enlarged Edition), Leningrad, "Energiya", 1971, 239 pp, ill. 99 k. (from RZh-Radiotekhnika, No 6, Jun 71, Abstract no 6V366 K)

Translation: The book is made up of five chapters. Of these, the first contains general information on film capacitors, the second and third deal with the use of nonpolar (polystyrene, polyolerine, organofluorine) and polar (cellulose, polyester, polyethylene terephthalate, etc.) films in capacitors. Chapter four deals with capacitors with a combined dielectric, and chapter five describes thin-film capacitors with removed and retained substrate. N. S.

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REFORMATSKAYA, I. A.

"Deposition of Th, U, Np, and Pu Layers on Instrument Parts by the Method of Electrolytic Precipitation"

Leningrad, Radiokhimiya, Vol 13, No 1, 1971, pp 89-94

Abstract: A method was developed for electrolytic deposition of layers of uranium, thorium, neptunium, and plutonium oxides on parts of industrial instruments, using their nitrate salts in alcoholic solutions. Using stainless steel as a base, laminated layers could be deposited with a surface density of 0.2-5 mg/cm^2 for uranium and thorium, and 0.2-1.5 mg/cm^2 for neptunium and plutonium. This method makes it possible to isolate quantitatively up to 98.5% of the elements from electrolytic solution in 20-45 min, with a current density of 2-7 mA/cm^2. Both pure metal nitrate solutions and solutions of their mixtures could be used.

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